

U.S. PATENT DOCUMENTS

Examiner's	Cite	U.S. Patent Document		Name of Patentee or Applicant of Cited	Date of Publication or Issue of Cited Document MM-DD-YYYY	
Initials #	No.	Number Kind Code		Document Document		
		5,202,422		Hiatt et al.	04-13-1993	
		5,879,912		Roth	03-09-1999	
		5,959,177		Hein et al.	09-28-1999	
		6,046,040		Nishiguchi et al.	04-04-2000	
		6,054,304		Taniguchi et al.	04-25-2000	
		6,331,418		Roth	12-18-2001	
		20020174453	A1	Danielle et al.	11-21-2002	
		6,602,684		Umana et al.	08-05-2003	
		6,653,459		Von Schaewen et al.	11-25-2003	
		20040018127-	A1	Schaewen et al.	01-29-2004	
		20040072290	A1	Umana et al.	04-15-2004	
		20040181827	A1	Schaewen et al.	09-16-2004	
		20040214273	A1	Fujiyama et al.	10-28-2004	
		20050144670	A1	Fujiyama et al.	06-30-2005	
		20050143564	A 1	Seki et al.	06-30-2005	
		20050223430	A1	Bakker et al.	10-06-2005	
		6,998,267		Seki et al.	02-14-2006	
		7,001,998		McKenzie et al.	02-21-2006	
		20060253928	A1	Bakker et al.	11-09-2006	
		20070214519	A1	Fujiyama et al.	09-13-2007	

FOREIGN PATENT DOCUMENTS

Examiner's	Cite No.	Foreign Patent Document		ment	Name of Patentee or Applicant of Cited	Date of	Translation
Initials #		Office/ Country	Number	Kind Code	Document	Publication of Cited Document MM-DD-YYYY	(Y/N)
•		wo	94/12646		Ciba Geigy Ag et al.	06-09-1994	
		wo	95/02683		Neose Pharm Inc	01-26-1995	
		WO	97/04122		Univ Washington et al.	02-06-1997	
,		wo	98/31826		Cytel Corporation	07-23-1998	
		wo	98/31828		Cornell Res Foundation Inc	07-23-1998	
		wo	99/24584		Neurotherapeutics et al.	05-20-1999	
		DE	19754622		Schaewen Antje Von Dr	06-10-1999	
		wo	99/29879		Von Schaewen Antje	06-17-1999	
		wo	99/38987		Meristem Therapeutics et al.	08-05-1999	
		wo	99/51185		Incyte Pharma Inc et al.	10-14-1999	
		wo	00/28792		Lightech Electronics Ind Ltd et al.	05-18-2000	
		wo	00/29603		Neose Technologies Inc et al.	05-25-2000	

wo	00/34490	Seki Tatsuji et al.	06-15-2000	
wo	00/49153	Altmann Friedrich	08-24-2000	Abstract
wo	00/52136	Human Genome Sciences Inc et al.	09-08-2000	
JР	2000287692	Mitsui Chemicals Inc	10-17-2000	Abstract
WO	01/29242	Monsanto Co	04-26-2001	
WO	01/31044	Stichting Dienst Landbouwkundi et al.	05-03-2001	
WO	01/31045	Stichting Dienst Landbouwkundi et al.	05-03-2001	
wo	01/49821	Centre Nat Rech Scient et al.	07-12-2001	
wo	01/49831	Kleesiek Knut et al.	07-12-2001	
WO	01/62912	Univ Guelph et al.	08-30-2001	
wo	01/64901	Gloessl Josef et al.	09-07-2001	
wo	01/81591	Agronomique Inst Nat Rech et al.	11-01-2001	1
wo	01/82912	Gerolymatos P N Sa et al.	11-08-2001	
wo	02/00879	Glycofi Inc	01-03-2002	
wo	02/57468	Fujiyama Kazuhito et al.	07-25-2002	
wo	02/070672	Fujiyama Kazuhito et al.	09-12-2002	
EP	1243647	Kyowa Hakko Kogyo Kk	09-25-2002	
wo	03/011878	Glycart Biotechnology Ag et al.	02-13-2003	
wo	03/076614	Sun Medical Co Ltd	09-18-2003	
wo	03/078614	Plant Research International B V et al.	09-25-2003	
WO	03/078637	Plant Research International B V et al.	09-25-2003	
wo	04/050838	The Dow Chemical Company et al.	06-17-2004	

OTHER ART — NON PATENT LITERATURE DOCUMENTS

Examiner's Initials #	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
		GENBANK Submission; NIH/NCBI, Accession No. AJ277603. Bakker et al. April 28, 2000.	
		ASANO et al., Growth retardation and early death of beta-1,4-galactosyltransferase knockout mice with augmented proliferation and abnormal differentiation of epithelial cells. EMBO J. 1997 Apr 15;16(8):1850-7.	
		BAKKER et al., Galactose-extended glycans of antibodies produced by transgenic plants. Proc Natl Acad Sci U S A. 2001 Feb 27;98(5):2899-904.	
		BAKKER et al., An Arabidopsis thaliana Cdna complements the N-acetylglucosaminyltransferase I deficiency of CHO Lec1 cells. Biochem Biophys Res Commun. 1999 Aug 11;261(3):829-32.	
		CABANES-MACHETEAU et al., N-Glycosylation of a mouse IgG expressed in transgenic tobacco plants. Glycobiology. 1999 Apr;9(4):365-72.	
		CHOI et al., Use of combinatorial genetic libraries to humanize N-linked glycosylation in the yeast Pichia pastoris. Proc Natl Acad Sci U S A. 2003 Apr 29;100(9):5022-7. Epub 2003 Apr 17.	
		CHRISPEELS and FAYE, The production of recombinant glycoproteins with defined non-immunogenic glycans. In: Transgenic plants: a production system for industrial and pharmaceutical proteins. John Wiley Pub, UK. 1996:99-113.	
		DINTER and BERGER, The regulation of cell- and tissue-specific expression of glycans by glycosyltransferases. Adv Exp Med Biol. 1995;376:53-82.	
		ELBERS et al., Influence of growth conditions and developmental stage on N-glycan heterogeneity of transgenic immunoglobulin G and endogenous proteins in tobacco leaves. Plant Physiol. 2001 Jul;126(3):1314-22.	
		ESSL et al., The N-terminal 77 amino acids from tobacco N-acetylglucosaminyltransferase I are sufficient to retain a reporter protein in the Golgi apparatus of Nicotiana benthamiana cells. FEBS Lett. 1999 Jun 18;453(1-2):169-73.	
		FISCHER and EVANS, Molecular farming of pharmaceutical proteins. Transgenic Research. 2000;9:279-299.	
		FUCHS et al., Purification and characterization of microbially expressed neomycin	

	T	phosphotransferase II (NPTII) protein and its equivalence to the plant expressed protein.	
	-	Biotechnology (N Y). 1993 Dec;11(13):1537-42.	
	+ '	FUJIYAMA et al., In vivo conversion of a glycan to human compatible type by transformed tobacco	
		cells. Biochem Biophys Res Commun. 2001 Nov 30;289(2):553-7.	
	 	GASSER and FRALEY, Genetically Engineering Plants for Crop Improvement. Science. 1989 Jun	
		16;244(4910):1293-1299.	
	1	GOMEZ and CHRISPEELS, Complementation of an Arabidopsis thaliana mutant that lacks	
		complex asparagine-linked glycans with the human cDNA encoding N-	
		acetylglucosaminyltransferase I. Proc Natl Acad Sci U S A. 1994 Mar 1;91(5):1829-33.	
		GRABENHORST and CONRADT, The cytoplasmic, transmembrane, and stem regions of	
		glycosyltransferases specify their in vivo functional sublocalization and stability in the Golgi. J Biol	
		Chem. 1999 Dec 17;274(51):36107-16.	
		HAMILTON et al., Production of complex human glycoproteins in yeast. Science. 2003 Aug	
	-	29;301(5637):1244-6.	
		HANDA et al., The alpha 1→3 fucosylation at the penultimate GlcNAc catalyzed by fucosyltransferase VII is blocked by internally fucosylated residue in sialosyl long-chain poly-	
		LacNAc: enzymatic basis for expression of physiological E-selectin epitope. Biochem Biophys Res	
		Commun. 1998 Feb 4;243(1):199-204.	
	+	HERMAN and HORVITZ, Three proteins involved in Caenorhabditis elegans vulval invagination	
	1.	are similar to components of a glycosylation pathway. Proc Natl Acad Sci U S A. 1999 Feb	
		2;96(3):974-9.	
		HEIN et al., Evaluation of immunoglobulins from plant cells. Biotechnol Prog. 1991 Sep-	
		Oct;7(5):455-61.	
•		HESS et al., Transformation experiments by pipetting Agrobacterium into the spikelets of wheat	
		(Triticum aestivum L.). Plant Science 1990;72:233-44.	
		HIEI et al., Efficient transformation of rice (Oryza sativa L.) mediated by Agrobacterium and	
•		sequence analysis of the boundaries of the T-DNA. Plant J. 1994 Aug;6(2):271-82.	
		HIEI et al., Transformation of rice mediated by Agrobacterium tumefaciens. Plant Mol Biol. 1997	
	+	Sep;35(1-2):205-18.	
		HOLLISTER et al., Engineering the protein N-glycosylation pathway in insect cells for production of biantennary, complex N-glycans. Biochemistry. 2002 Dec 17;41(50):15093-104.	
		IHARA et al., cDNA cloning, expression, and chromosomal localization of human N-	
		acetylglucosaminyltransferase III (GnT-III). J Biochem (Tokyo). 1993 Jun;113(6):692-8.	
·····	+	IOFFE and STANLEY, Mice lacking N-acetylglucosaminyltransferase I activity die at mid-	
		gestation, revealing an essential role for complex or hybrid N-linked carbohydrates. Proc Natl Acad	
		Sci U S A. 1994 Jan 18;91(2):728-32.	
	1	ISHIDA et al., High efficiency transformation of maize (Zea mays L.) mediated by Agrobacterium	
		tumefaciens. Nat Biotechnol. 1996 Jun;14(6):745-50.	
		JÄHNE et al., Genetic engineering of ceral crop plants: a review. Euphyica. Kluwer Academic	
	1	Publishers. 1995:85:35-44.	
		JAMES et al., Production and characterization of biologically active human GM-CSF secreted by	
	 	genetically modified plant cells. Protein Expr Purif. 2000 Jun;19(1):131-8.	
		JENKINS et al., Getting the glycosylation right: implications for the biotechnology industry. Nat	
•	 	Biotechnol. 1996 Aug;14(8):975-81. KAWAR et al., Insect cells encode a class II alpha-mannosidase with unique properties. J Biol	
	1	Chem. 2001 May 11;276(19):16335-40. Epub 2001 Feb 9.	
	 	KIELISZEWSKI et al., Tandem mass spectrometry and structural elucidation of glycopeptides from	
	1	a hydroxyproline-rich plant cell wall glycoprotein indicate that contiguous hydroxyproline residues	
	1	are the major sites of hydroxyproline O-arabinosylation. J Biol Chem. 1995 Feb 10;270(6):2541-9.	
	1	KLEENE et al., Expression of soluble active human beta 1,4 galactosyltransferase in	
		Saccharomyces cerevisiae. Biochem Biophys Res Commun. 1994 May 30;201(1):160-7.	
		KU et al., High-level expression of maize phosphoenolpyruvate carboxylase in transgenic rice	
	<u> </u>	plants. Nat Biotechnol. 1999 Jan;17(1):76-80.	
		LEITER et al., Purification, cDNA cloning, and expression of GDP-L-Fuc:Asn-linked GlcNAc	
	1	alpha1,3-fucosyltransferase from mung beans. J Biol Chem. 1999 Jul 30;274(31):21830-9.	
	.	LEROUGE et al., Control of the N-Glycosylation of therapeutic glycoproteins produced in	
	1	transgenic plants: a new challenge for glycobiologists. Molecular Farming of Plants and Animals for	
		Human and Veterinary Medicine. Chapter 4, 2002;73-109.	

		LEROUGE et al., N-glycoprotein biosynthesis in plants: recent developments and future trends.	
		Plant Mol Biol. 1998 Sep;38(1-2):31-48.	
		LEROUGE et al., N-glycosylation of recombinant pharmaceutical glycoproteins produced in	
		transgenic plants: towards an humanisation of plant N-glycans. Curr Pharm Biotechnol. 2000 Dec;1(4):347-54.	
		LI et al., Cloning, expression and characterization of a cDNA (6A8) encoding a novel human alpha-	
		mannosidase. Eur J Biochem. 2000 Dec;267(24):7176-83. Erratum in: Eur J Biochem 2001 Nov;268(21):5653.	
		MADSON et al., Altered xyloglucans of arabidopsis thalianamutants bind normally to cellulose in	
		vivo and in vitro. Poster from Plant Biology(Rockville) 27 July 2001 Abstract #527	
		MAGNUSON et al., Secretion of biologically active human interleukin-2 and interleukin-4 from genetically modified tobacco cells in suspension culture. Protein Expr Purif. 1998 Jun;13(1):45-52.	
		MAGNUSON et al., Enhanced recovery of a secreted mammalian protein from suspension culture	
		of genetically modified tobacco cells. Protein Expr Purif. 1996 Mar;7(2):220-8.	
		MARAS et al., In vitro conversion of the carbohydrate moiety of fungal glycoproteins to	
		mammalian-type oligosaccharides—evidence for N-acetylglucosaminyltransferase-I-accepting glycans from Trichoderma reesei. Eur J Biochem. 1997 Nov 1;249(3):701-7.	
		MASRI et al., Identification of the full-length coding sequence for human galactosyltransferase	
		(beta-N-acetylglucosaminide: beta 1,4-galactosyltransferase). Biochem Biophys Res Commun. 1988	
		Dec 15;157(2):657-63.	
		MIYAKE et al., Purification of human erythropoietin. J Biol Chem. 1977 Aug 10;252(15):5558-64.	
	·	MIYOSHI et al., The alpha1-6-fucosyltransferase gene and its biological significance. Biochim	
		Biophys Acta. 1999 Dec 6;1473(1):9-20.	
		MOKRZYCKI-ISSARTEL et al., A transient tobacco expression system coupled to MALDI-TOF-	
		MS allows validation of the impact of differential targeting on structure and activity of a	
		recombinant therapeutic glycoprotein produced in plants. FEBS Lett. 2003 Sep 25;552(2-3):170-6.	
•		PALACPAC et al., Stable expression of human beta1,4-galactosyltransferase in plant cells modifies N-linked glycosylation patterns. Proc Natl Acad Sci U S A. 1999 Apr 13;96(8):4692-7.	
		PALACPAC et al., Structures of N-linked oligosaccharides of glycoproteins from tobacco BY2	
		suspension cultured cells. Biosci Biotechnol Biochem. 1999 Jan;63(1):35-9.	
		RAYON et al., N-Glycosylation of phytohemagglutinin expressed in bean cotyledons or in	
		transgenic tobacco plants. Plant Physiol Biochem. 1996;34:273-81.	
		ROTHMAN, Protein sorting by selective retention in the endoplasmic reticulum and Golgi stack. Cell. 1987 Aug 14;50(4):521-2.	
		SAKAI et al., Fatty Acid acylation of apoE by human monocyte/marophages and helptocytes. April 1998; 417. Abstract.	
		SAKAI et al., Human glycosyltransferase expression and intracellular/intercellular glycoprotein	Abstract
	ì	sugar chain structure in cultured tobacco BY2 cells. Corrected title: Expression of human β 1,4-	
		galactosyltransferase in tobacco BY2 cells modifies glycosylation patterns of intracellular and	
		extracellular glycoproteins. IC Biotech. Osaska, Nara Institute. March 1998. Abstract.	
		SCHACHTER, The 'yellow brick road' to branched complex N-glycans. Glycobiology. 1991	
		Nov;1(5):453-61.	
		SEVENO et al., Glycoprotein Sialylation in plants? Nat Biotechnol. 2004 Nov;22(11):1351-2.	
		SHAH et al., Sialylated endogenous glycoconjugates in plant cells. Nat Biotechnol. 2003	
		Dec;21(12):1470-1. Epub 2003 Nov 9.	
		STRASSER et al., Molecular cloning of cDNA encoding N-acetylglucosaminyltransferase II from Arabidopsis thaliana. Glycoconj J. 1999 Dec;16(12):787-91.	
		TAKAHASHI et al., Xylose-containing common structural unit in N-linked oligosaccharides of	
		laccase from sycamore cells. Biochemistry. 1986;25(2):388-95.	
		TANG et al., The transmembrane domain of N-glucosaminyltransferase I contains a Golgi retention	
		signal. J Biol Chem. 1992 May 15;267(14):10122-6.	
		TANIGUCHI et al., A glycomic approach to the identification and characterization of glycoprotein function in cells transfected with glycosyltransferase genes. Proteomics. 2001 Feb;1(2):239-47.	
		TERAYAMA et al., Cloning and functional expression of a novel glucuronyltransferase involved in	
	1	the biosynthesis of the carbohydrate epitope HNK-1. Proc Natl Acad Sci U S A. 1997 Jun	
	<u> </u>	10;94(12):6093-8. VAN ENGELEN et al., Coordinate expression of antibody subunit genes yields high levels of	

Т	VAN REE et al., Beta(1,2)-xylose and alpha(1,3)-fucose residues have a strong contribution in IgE	
	binding to plant glycoallergens. J Biol Chem. 2000 Apr 14;275(15):11451-8.	
	VITALE and CHRISPEELS, Transient N-acetylglucosamine in the biosynthesis of	
	phytohemagglutinin: attachment in the Golgi apparatus and removal in protein bodies. J Cell Biol. 1984 Jul;99(1 Pt 1):133-40.	
	VOELKER et al., In vitro mutated phytohemagglutinin genes expressed in tobacco seeds: role of glycans in protein targeting and stability. Plant Cell. 1989 Jan;1(1):95-104.	
	WARNER, T.G., Metabolic engineering glycosylation: biotechnology's challenge to the glycobiologist in the next millenium; Carbohydrates in chemistry and biology, part II Vol. 4. editors Earnst et al. (2000) Wiley-VCH. 1042-64.	
	WEE et al., Targeting of active sialyltransferase to the plant Golgi apparatus. Plant Cell. 1998 Oct;10(10):1759-68.	
	WILSON et al., Core alpha1,3-fucose is a key part of the epitope recognized by antibodies reacting against plant N-linked oligosaccharides and is present in a wide variety of plant extracts. Glycobiology. 1998 Jul;8(7):651-61.	
	WILSON et al., Cloning and expression of cDNAs encoding alpha1,3-fucosyltransferase homologues from Arabidopsis thaliana. Biochim Biophys Acta. 2001 Jul 2;1527(1-2):88-96.	
	WRIGHT and MORRISON, Effect of glycosylation on antibody function: implications for genetic engineering. Trends Biotechnol. 1997 Jan;15(1):26-32.	
	YAMAGUCHI et al., Genomic structure and promoter analysis of the human alpha1, 6-fucosyltransferase gene (FUT8). Glycobiology. 2000 Jun;10(6):637-43.	
	YIN et al., [Obtaining transgenic rice plants and their progenies using Agrobacterium tumefaciens] Yi Chuan Xue Bao. 1998 Dec;25(6):517-24. Chinese.	Abstract
	YOSHIDA et al., Molecular biology and application of plant peroxidase genes. Appl Microbiol Biotechnol. 2003 Feb;60(6):665-70. Epub 2002 Dec 18.	
-	YOSHIDA et al., Expression of \$1 4 galactosyltransferase in tobacco culture cell. Program for Congress of the Society for Bioscience and Bioengineering of Japan. 1995 Sep15;1-5.	
	ZHANG et al., Transformation of tobacco using human β-1, 4 galactosyltransferase gene and regeneration of transgenic plants. Annual reports of IC Biotech. 1995;18:241-7.	
	ZHANG et al., Agrobacterium-mediated transformation of elite indica and japonica rice cultivars. Mol Biotechnol. 1997 Dec;8(3):223-31.	
	ZHANG and WANG, Quantitative analysis and process monitoring of site-specific glycosylation microheterogeneity in recombinant human interferon-gamma from Chinese hamster ovary cell culture by hydrophilic interaction chromatography. J Chromatogr B Biomed Sci Appl. 1998 Aug 7;712(1-2):73-82.	
	ZHU et al., Beta 1,4 N-acetylgalactosaminyltransferase (GM2/GD2/GA2 synthase) forms homodimers in the endoplasmic reticulum: a strategy to test for dimerization of Golgi membrane proteins. Glycobiology. 1997 Oct;7(7):987-96.	

EXAMINER:	DATE CONSIDERED:

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